
National Aeronautics and Space Administration

ROSAT

**FINAL TECHNICAL REPORT
FOR NASA GRANT NAG 5-3287**

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Title of Research: **"High Spatial Resolution Studies of Blastwave
Interactions in the Vela Supernova Remnant"**

Principal Investigator: William Craig

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This document is to serve as the requisite Final Technical Report on grant NAG 5-3287 which was awarded under the NASA ROSAT Guest Investigator Program to Columbia University (Dr. W.W. Craig, PI).

In response to the NASA Research Announcement describing the fourth round of Guest Investigations to be carried out under the US-German ROSAT program (AO-4), the PI submitted a proposal:

“High Spatial Resolution Studies of Blastwave Interactions in the Vela Supernova Remnant”, which targeted two interaction zones within the Vela supernova remnant for HRI observation, funds were provided for data reduction and analysis.

Approximately 40 ksec of HRI integration time was awarded for each of the awarded target regions, one at priority 2 and one at priority 3. The observations have been completed for the priority 2 observation. Some observations have been made of the priority 3 target, however the data have not yet been received by the PI. The priority 2 data have been received and analyzed and the results have been prepared for publication. The chief results are as follows:

- the radial profile of the X-ray emission from the western rim is characterized by a sudden increase in emission at the blastwave interaction region which is unresolved spatially at HRI resolution. The profile is consistent with the expanding blastwave from the remnant encountering a large, coherent structure in the surrounding ISM.
- the X-ray emission lags slightly 'behind', $\sim 10^{16}cm$ the $H\alpha$ and OIII optical filaments, consistent with the expected spatial profile of the emission assuming parameters derived from earlier PSPC observations of the region.
- the combination of the X-ray and optical interference filter data allow us to set limits on the distance to the Vela remnant and the general nature of the blastwave interactions in the remnant.

The results of this work and their implications for the study of both the Vela region and interactions in the ISM in general are described in a paper which is being submitted for publication in the *Astrophysical Journal* (Craig, Kahn, and Hester 1997).